SG-2020 Tech Update

IMPORTANT INFORMATION UPDATE FOR OPERATORS OF THE SG-2020 HF SSB TRANSCEIVER

October 1998

PERFORMANCE

1-1 Receiver performance is of the highest in the industry with IP3 performance of +18dBM

1-2 Selectivity is well within the best specifications in the industry, at 2.7KHz and not less than 60dB rejection on the adjacent channel.

1-3 IF configuration and design -
Most existing HF transceivers are designed with 2, 3 or 4 IF stages. Many users believe that just one IF stage (as in the SG-2020) provides inferior performance. Actually, the contrary is true. The less IF stages there are, the less receiver and transmitter spurious frequencies are apparent. Generally, if the design is done right, one IF stage is sufficient. This also provides superior receiver performance. The SG-2020 receiver is equal or better than most transceivers available in the commercial or ham markets.

1-4 Transmitter linearity is the best in the industry with a special VOGAD system providing signal transmission of strengths equivalent to much higher 100 watt transmitters.

1-5 Stress Power-
Set maximum output capability of the transceiver by setting the output level to "M" for maximum. With 20mV RMS AF input at the microphone connector are:

Frequency	Power Range
1.8 MHz	23 to 27 watts
3.7 MHz	23 to 35 watts
7 MHz	30 to 40 watts
14 MHz	35 to 45 watts
18 MHz	30 to 42 watts
29 MHz	14 to 23 watts

The above readings are for reference and orientation only and may change without notice.
ATTENTION: Above stress power test should *not* be extended more than ten seconds otherwise Power Transistors may get damaged.
This test is not covered under warranty.

OPERATION

2-1 Power On Options-
Note: Holding "CMD" upon power up will cause the 1st step to allow entry into the calibration routine. (The LCD will display "C"). Without the next key sequencing the sequence will abort to normal radio operation about a second after "CMD" is released.
Supersedes page 16, paragraph 11.1

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2-2 Backlight Default On/Off and LED Test

An LED test sequence has been added to the backlight on/off power up sequence.
Power up the radio while depressing the "light" button.
Hold it until either "dl ON" or "dl OFF" is displayed.
Select whether you want the backlight on or off when the radio is turned on. This is done by using the "REV" button to toggle between "dl ON" and "dl OFF".
Store the choice by depressing the "MEM" button.
Once the "MEM" button is released, a sequential test is performed on each LED and the backlight.
Radio then reverts to normal operation.

2-3 SCAN Variables-

The following settings are available for SCAN function: **Enter: 'CMD' + 'REV'**

Dwell Time: 0.5 thru 10 seconds, 0.1 second increments
Press MEM to enter. **Dwell: 'd' is displayed**
Pause on Detection: 1 thru 120 seconds, 1 second increment.
Press MEM to enter. **Pause: 'P' is displayed**
Detection Threshold: S1 thru S9, 1 'S' unit increment.
Press MEM to enter. **Threshold: 'S' is displayed**
Audio Blanking Time: 0 - 1.28 seconds in 10 ms intervals.
Press MEM to enter. **Blanking: 'b' is displayed**
Frequency Step: .1, .5, 1.0, or 2.5 kHz.
Press MEM to enter. **FRQ Step: 'F' is displayed**

2-4 Fast Tuning

Fast tuning can be set up to 10 kHz to allow extremely fast coverage through the whole bands (manual page 16, paragraph 10.7).

2-5 CW Sidetone

The CW sidetone level can be adjusted internally, by adjusting the surface mounted potentiometer R46 on the exciter board next to the large electrolytic capacitor of 470µf and between J1 and J2 connector.

NOTE: The SG-2020 is set to transmit at 650 Hz upper sideband tone. Setting the dial frequency for the same receive and transmit frequency "Push Button RCVE" will transmit a tone frequency of 650 Hz above the carrier frequency (upper sideband).

2-6 The latest software version 1.05 Code Revision is displayed by pushbutton REV, depressed while powering up.

2-7 Location of pushbuttons -

All four main pushbuttons: FAST, MEM, BW, REV have been designed and located for convenient one-hand operation. A few users have complained that two hands are required and that the push buttons are too close. Users should become familiar with the use of one hand, using these push buttons and the main tuning knob.

2-8 The Transmit bar graph will also work in the Iambic key mode.
Supersedes page 17, note 2.

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2-9 SG-2020 Procedure for power on or intermittent power supply 'glitch display' @ 66 MHz. The following procedure will cure the intermittent problem of the SG-2020 "power on glitch" when the display reads 66 MHz.

(A) Power on radio

(B) Engage "channel scan" mode, by doing the following:

(1) **depress and hold "CMD" button**

(2) **depress "MEM" button**

(3) **release "MEM" button**

(4) **release "CMD" button**

NOTE: It may take up to 5 minutes to re-establish the memories, although it is usually accomplished in just a few seconds.

(C) Exit "channel scan" by depressing any key.

2-10 Headphone -

Some headphones are very sensitive and provide an outstanding low frequency response. In this situation, we suggest use of a communications type headphone or an attenuator between the speaker jack and the headphone.

2-11 DC Voltmeter: 'CMD' + 'SPEED'.

Previously you had to keep the keys depressed to read the voltage.

Now the voltage will remain displayed until one of the following actions is performed:

A. Move the adjustment knob.

B. Initiate transmit while in CW mode.

C. Depress any of the following keys:

1. any 'CMD' + 'XXX' combination
2. 'SPEED'
3. 'PBT'
4. 'MEM'
5. 'BW'

2-12 RIT to XCVE change.

Previously when changing from RIT to XCVE, the RIT receive frequency became the active frequency. Now the RIT transmit frequency will become the active frequency.

2-13 Coupler Tune capability.

The ability to send a tone to the coupler in SSB has been incorporated as follows:

A. Depress and release 'PBT' within 5 seconds

B. Depress and hold 'PTT'

The SG-2020 will transmit a tone as long as PTT is depressed.
Once you release PTT, the radio reverts to SSB with no tone and normal transmission can continue.

NOTE: Once 'PBT' has been depressed you MUST key PTT with-in 5 seconds or the function will time out. Also you may escape this function by depressing any other key or moving the main adjustment knob.

2-14 CW transmit using the microphone.

If in CW mode, you may now use your microphone PTT to transmit CW.

DESIGN APPLICATIONS

3-1 SG-2020 Fuse-

The SG-2020 has an internal, self-recovering, 5 amp fuse. This fuse is not visible and it is mounted under the LPA PCB. The fuse will recover within a few seconds after the short in the radio has been removed.

3-2 SG-2020 for Commercial Use -

This unit is designed to allow simple operation for any casual operator. For example, if only 4 channels are required, enter these 4 channels 5 times in the 20 memories and lock the unit. Now, the operator depresses the MEM push button and rotates the main tuning knob and only the four preset channels will be accessible.
Lockout (PBT & RIT) page 16 of manual, paragraph 11.3

3-3 Linear Amp SG-500 -

The SG-2020 is fully compatible with our SG-500 watt amplifier. Expected power from 3 to 18 MHz is not less than 450 watts and not less than 300 on the extreme ends of the HF bands. Only the RF is required to control the SG-500.

3-4 Receiver CW Operation -

The SG-2020 was designed with high performance CW operation.
To achieve best use of this unit under crowded situations, the combination of the 3 functions designed for this purpose will provide the user outstanding performance, as follows:

- BW adjustment
- RF control

If interfering signals are still present, use the passband tuning in conjunction with the main tuning knob for best rejection.

WARRANTY

4-1 Calibration and Adjustment -

Calibration and adjustment is factory set only. Any adjustments made on the SG-2020, besides the R46 sidetone are NOT covered by warranty.

4-2 SG-2020 Transceiver Warranty -

- Standard Warranty 90 days parts and labor after purchase date.
- Protect your equipment longer with the Extended 3 Year Warranty for only $139.95.

4-3 Specifications listed represent optimal conditions and are not subject to warranty. All SGC products must be used with compatible equipment.

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